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ABSTRACT

Despite the soaring stock market, low unemployment, and low inflation rate, the long-term prospects for U.S. economic health remain a cause for concern. Labor productivity has slowed since 1973. As a result of this slowdown, many companies are investing in work force development and new equipment to boost productivity. Long-term economic health and higher standards of living can be achieved only by accelerating the economy's growth rate and productive capacity. Several factors have contributed to the slowdown in productivity, including rising oil prices and lagging business investment. Some have suggested that changes in the sectoral composition of output make productivity more difficult to measure. During the 1990s, low rates of productivity have been partly due to tight labor markets and unskilled labor pools. Improved education is a partial remedy to the productivity problem. Clearly, efforts to improve all aspects of the education and training system will be critically important and will have serious implications for the future health of the U.S. economy. Raising academic standards, improving teacher quality, and ensuring that companies and individuals invest in their education and training will be important ingredients for boosting productivity and, ultimately, economic growth in the years and decades to come. (MN)

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NATIONAL ALLIANCE OF BUSINESS

Workforce Economics

UNDERSTANDING CHANGE IN WORK AND THE WORKPLACE

U.S. Productivity

The Challenges Ahead

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U.S. Productivity

The Challenges Ahead

Amid a soaring stock market, tightening labor markets and growing employment, many economists and policymakers suggest that U.S. economic performance is the best it has been in years. In fact, the misery index — a measure combining the unemployment rate and the inflation rate — is at its lowest level since 1965. However, despite the widespread hype about our recent economic performance, the long-term prospects for U.S. economic health are still a cause for concern.

For instance, labor productivity — the most important indicator economists use to evaluate the health and long-term growth of the economy — has slowed since 1973. And productivity ups and downs have a profound effect on living standards. Consider the following data. Between 1960 and 1973, productivity growth increased an average of nearly 3 percent. At that rate, U.S. living standards would double every 24 years. In contrast, increases in labor productivity in the 1990s averaged just over 1 percent, which would mean that living standards would double only every 55 years.

As a result of this slowdown, many companies are investing in workforce development and new equipment to boost productivity. Indeed, long-term economic health and higher standards of living can be achieved only by accelerating the growth rate of the economy and its productive capacity.

Productivity as an Economic Barometer

Over the long run, as we argued in the December 1995 issue of *Workforce Economics*, there is a direct connection between labor productivity, which is defined as output per unit of input used in producing goods and services, and overall rates of compensation. Between 1959 and 1973, when the U.S. economy experienced high productivity growth rates, real compensation (including wages, salaries and benefits and adjusted for changes using the Implicit Price Deflator) grew at an average annual rate of 2.9 percent.

When productivity growth slowed soon after 1973, increases in compensation dropped to about one-third of what they had been, averaging only a 1 percent annual increase. And between 1980 and 1998, when productivity growth picked up slightly, real compensation increased at an average annual rate of 1.3 percent — above the average annual rate experienced between 1973 and 1980 but still well below the rate of change in real compensation seen between 1959 and 1973. Productivity growth rates thus have a significant impact not only on the overall health of the large-scale economy but also on the pocketbooks of individual workers.

Explaining the Deceleration in Productivity

If productivity is key to a strong and flourishing economy, what do labor productivity levels say about the U.S. economy, where it has been and — most importantly — where it is going? Unfortunately, these trends are slow to emerge, and distinguishing temporary cyclical swings from long-term patterns of growth requires careful analysis. As the chart on page 4 indicates, since 1973, the rate of growth in labor productivity has slowed considerably from the 2.8 percent annual rate of the period between 1960 and 1973.

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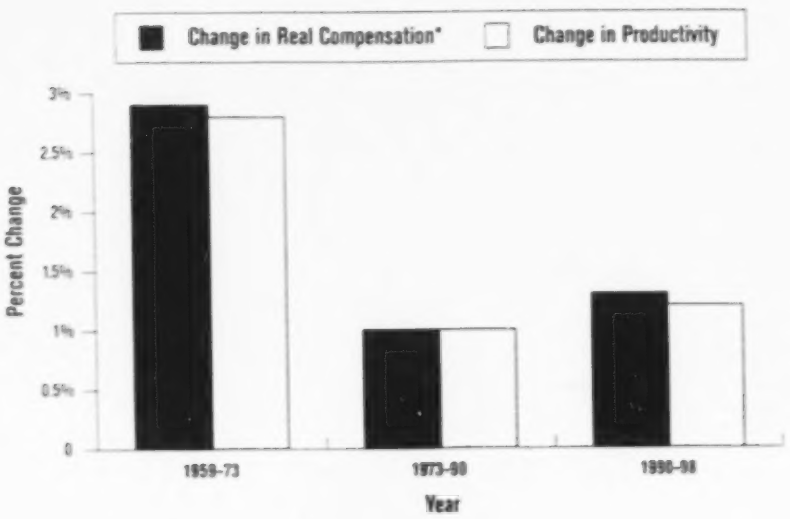
The Link Between Compensation and Productivity



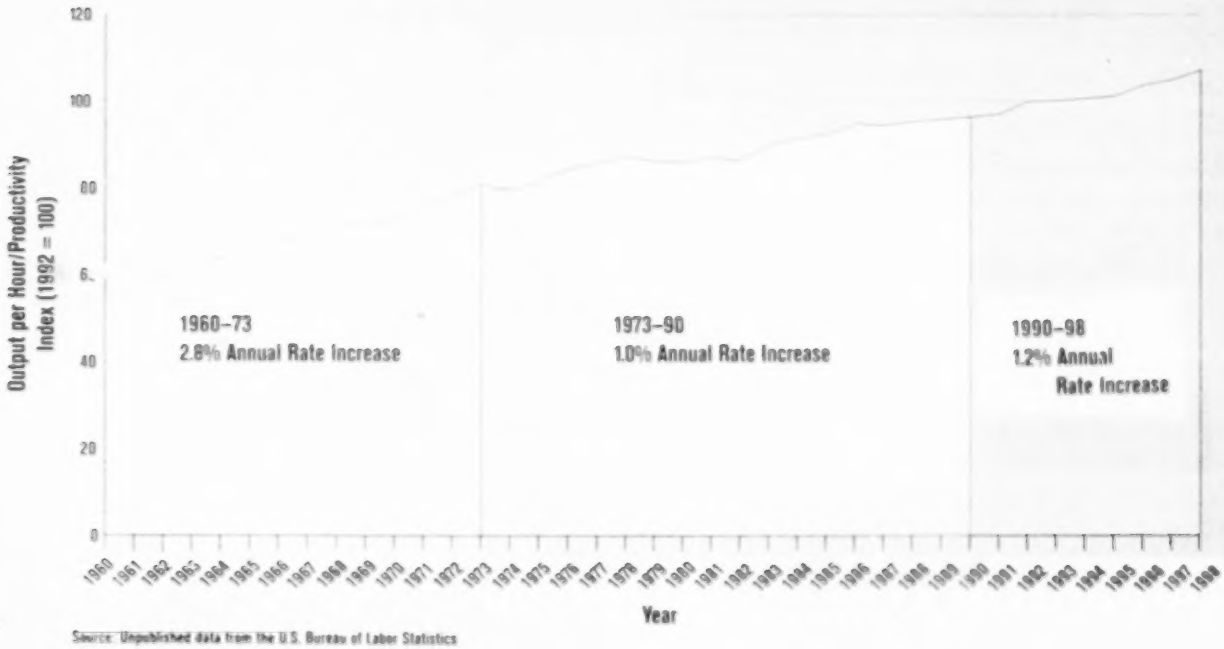
Source: Unpublished data from the U.S. Bureau of Labor Statistics
*Both data series are deflated using the Implicit Price Deflator

Understanding this recent deceleration in productivity could yield valuable lessons for future economic policy. Economists know the general principles that explain productivity: The rate of productivity growth can be increased by expanding or adding new inputs of labor and capital or by raising the quality and quantity of existing labor and capital. But in light of this, what specifically has happened since 1973 to bring about such a productivity slowdown — and how might it be reversed? Economists cite a number of factors.

Rising Oil Prices

Among the numerous factors that contribute to the drop in productivity, some economists point to the rapid rise in oil prices during the 1970s; however, close analysis reveals

Average Annual Increases in Productivity Slow Dramatically After 1973



Source: Unpublished data from the U.S. Bureau of Labor Statistics
*Data are adjusted for changes in prices

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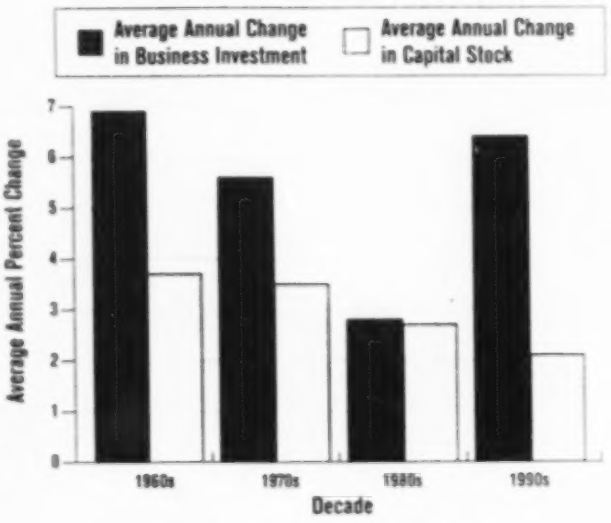
that the impact of this factor likely was minimal. Productivity growth in the United States had begun to slow before 1973, the year the first Organization of Petroleum Exporting Countries (OPEC) "oil shock" occurred. And even after the first oil crisis, other oil-importing countries did not experience the same slowdown in productivity growth that occurred in the United States. Moreover, as energy prices fell during the 1980s, U.S. productivity growth continued to be sluggish; if energy prices had been an important determinant for productivity, the United States should have seen an acceleration in productivity during the 1980s.

Average Annual Rates of Change in Real Business Investment and Capital Stock, 1960–98



Source: Unpublished data from the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis

Lagging Business Investment

Listless productivity growth since the early 1970s also is attributed to lower rates of business investment. Looking at U.S. Bureau of Labor Statistics data on multifactor productivity trends (output related to a combination of production inputs, such as labor and capital), we see that the contribution of capital services to labor productivity has decreased during the last 25 years or so. For instance, the average annual increase in real business investment (adjusted for price changes) between 1959 and 1973 was about 5.4 percent; in contrast, between 1973 and 1990, business investment rose by an average of only 2.2 percent per year. Since 1990, real business investment has rebounded to average about 3.7 percent per year, but it still remains relatively low.

From these figures, we see that average annual rates of change in business investment fell off during the 1970s and 1980s and picked up again in the 1990s. Why, then, has productivity growth in the United States continued to lag during this decade?

Since the 1970s, the U.S. economy has experienced a long-term decline in the average annual change in capital stock — the cumulative value, adjusted for depreciation, of past investing that is still in existence — which many economists consider a key driver in increasing productivity. Companies must invest their capital more frequently in new technology to compete and succeed. Thus, while business investment has picked up quite a bit in the 1990s, there has not been a similar increase in capital-accumulation rates, and as a result, productivity has not been buoyed as much by investment as in earlier decades. (For more on this topic, see "Waiting for the Return on Information Technology Investments" in the December 1996 issue of *Workforce Economics*.)

Bishop found that labor quality now would be about 3 percent higher and Gross National Product (GNP) would have been $86 billion greater through 1980 if test scores had not declined. And he speculates that the negative effect of a continuing decline in test scores on GNP will double over the next 15 years.

Changes in the Sectoral Composition of Output

Some economists point to the shift from a manufacturing-based to a service-based economy as another cause for slowdown in productivity growth, arguing that this shift has

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made productivity more difficult to measure — "hidden," in a sense. In today's economy, nonmanufacturing sectors such as trade, financial services and health care represent a larger share of economic output and employment but are more difficult to gauge in terms of productivity. As we demonstrated in the April 1997 issue of *Workforce Economics*, this shift can account for some of the slowdown in "measured" productivity for the economy as a whole since the early 1970s. However, estimates from economists at the Board of Governors of the Federal Reserve System suggest that this shift would account for no more than one-sixth of the decline in productivity growth in the last 25 years.

Changes in Workforce Quality

A fourth explanation for low productivity growth rates is a decline or leveling off in workforce quality. In this cause-and-effect relationship, we can see that the economic costs of subpar academic achievement are large and long lasting for the economy as a whole.

For instance, in an article published in the *American Economic Review*, John Bishop suggests that the decline in student test scores from the late 1960s through about 1980 had a substantial impact on productivity and the economy. Bishop found that labor quality now would be about 3 percent higher and Gross National Product (GNP) would have been $86 billion greater through 1980 if test scores had not declined. And he speculates that the negative effect of a continuing decline in test scores on GNP will double over the next 15 years.

However, the effect of decreasing tests scores on the GNP also testifies to the substantial potential benefits of improving academic performance and achievement. In addition, empirical evidence on the return on investment for education and training supports the importance of education to increasing productivity. While improvements in education generally take several years to manifest results, the consequences of not preparing students for work are significant in the economic big picture.

Challenges Ahead for U.S. Productivity

After a long trend of slow gains in productivity, growth accelerated in the United States between 1997 and 1998, increasing by 2.2 percent. Although this recent increase is still well below the 2.8 percent annual rate of productivity growth seen between 1960 and 1973, it begs the question whether the upswing is the beginning of a long-term trend or just a fleeting anomaly, whether productivity is experiencing a true strengthening or just a short-term boost. The answer remains to be seen. However, a number of challenges certainly stand in the way of future productivity growth as we move into the next millennium.

Tight Labor Markets and Unskilled Labor Pools

During the 1990s, low rates of productivity growth have been due in part to the tightness of the labor market. As we pointed out in the June 1998 issue of *Workforce Economics*, slowdowns in labor-supply growth and a leveling-off of labor-force participation rates have contributed recently to lower rates of growth in economic output. Indeed, the potential rate of growth in the economy (defined as the sum of labor productivity and changes in labor supply) remains at about only 2.5 percent, because labor-supply growth is decelerating faster than productivity growth is accelerating. In coming years, very tight U.S. labor markets will continue to be a hurdle to economic growth. (For more on the changes taking place in labor supply, see the June 1998 issue of *Workforce Economics*, "The Supply Side of the Labor Market.")

In addition, data on productivity trends suggest that the quality of labor composition (measuring experience, hours worked and skills) has led to an accelerated contribution to productivity by workers in recent years. However, this increase in quality may reflect the aging — and, therefore, greater experience of the baby-boom generation, which makes up a substantial portion of the workforce. As such, it is not clear whether the contribution of workers to productivity can be sustained in coming years.

Quality of Young Workers Inches Up

Year	Share of High School Graduates Entering Higher Education	Share of 25- to 29-Year-Olds With Four or More Years of College
1972	51%	19%
1979	49	23
1989	60	23
1997	67	28

Source: U.S. Bureau of Labor Statistics and the National Center for Education Statistics

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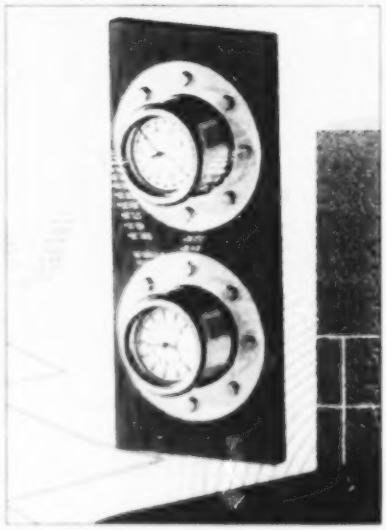
as the baby boomers begin to retire. When more highly skilled workers leave the workforce, more of the overall burden of contribution to productivity will be shifted to younger workers — but are we preparing young people to bear such a burden?

While a number of efforts to improve education have emerged during the last several years in this country, for the past 25 years the nation as a whole has been reluctant to invest in its own economic future by providing funds for improved education. Between 1959 and 1973, the share of Gross Domestic Product (GDP) devoted to education rose by over 2 percent; in contrast, between 1974 and 1995 (the last year for which data are available), the share of GDP devoted to education remained unchanged. And as we showed in the February 1997 issue of *Workforce Economics*, student academic performance (as measured by scores on standardized tests) was flat from the early 1970s until recently.

Perhaps the lack of national investment in education in the past has impaired the overall quality of young workers currently joining the labor pool. Although we have seen a substantial increase in the number of high school graduates who enroll in college, the college completion rate has increased more slowly. And despite some recent gains in academic performance, younger people as a group still may not be preparing themselves adequately enough to fill the productivity gap that soon will be left by retiring baby boomers, which ultimately may hamper U.S. productivity for many years to come.

Solutions to the Productivity Problem

The search for the cause of the slowdown in overall U.S. productivity growth has yielded not one but several contributing factors. Most of the factors we have discussed here (and some others as well) likely have come together since the early 1970s to curb productivity. In light of this, policy prescriptions for improving productivity in the future should not be organized around a single, concentrated push, but instead should be made on several fronts over an extended period of time, with the big economic picture in mind.



"Productivity ... determines the prosperity of any state or nation. ... The microeconomic foundations for competition will ultimately determine productivity and competitiveness ... they must ensure the supply of high-quality inputs such as educated citizens and physical infrastructure."

–Michael E. Porter,
Harvard Business Review

However, we can pinpoint improved education as a partial remedy to the productivity problem. Faced with a shortage of skilled, productive workers in coming years, the nation clearly is in a tenuous economic position brought on by diminished investment in education. As Michael E. Porter observed in a recent essay in the *Harvard Business Review*, "productivity ... determines the prosperity of any state or nation. ... The microeconomic foundations for competition will ultimately determine productivity and competitiveness ... they must ensure the supply of high-quality inputs such as educated citizens and physical infrastructure." Clearly, efforts to improve all aspects of our education and training system will be critically important and will have serious implications for the future health of the U.S. economy.

Raising academic standards, improving teacher quality, and ensuring that companies and individuals invest in their education and training will be important ingredients for boosting productivity and, ultimately, economic growth in the years and decades to come. With our minds so focused on the challenges coming in the next millennium, now is the perfect time to invest in the long-term success of the U.S. economy.

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Workforce Economics

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The National Alliance of Business is an independent, nonprofit, business-led organization committed to building partnerships to solve issues related to the quality of our nation's education system, workforce and job training programs. The Alliance directs programs, creates public awareness, shapes public policy, and builds coalitions and partnerships.

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Increasing the Productivity of Workers on the Road. Anyone who has traveled for business knows the headaches of trying to get work done amid the hustle and bustle of airports — jockeying for a phone, trying to send a fax, searching for a place to plug in the laptop. But now a new group of start-up companies is trying to help businesspeople make travel time even more productive by providing quiet office space in airport terminals for workers on layovers between flights. The spaces, which can be rented for short periods of time, offer Internet connections and the latest in computers, faxes and printers at major airports around the country, according to *Inc.* magazine.

Search for a Job While You Pump Gas. Looking for a new job in the engineering, accounting, information technology or manufacturing fields? Be sure to check out the gas station, shopping mall or convenience store in your neighborhood. To alleviate the continuing need for skilled workers in these fields, employment agencies are placing computer kiosks in unusual, high-traffic areas, according to *Training* magazine. Job hunters can step up to the computer touch screen and register to be considered for job placement.

Virtual Universities Grant Real Bachelor's Degrees. Workers looking to get ahead can now enroll in virtual universities to finish their bachelor's degree. The first accreditation of a distance-education provider, Jones International University, means that online students will be able to take advantage of the flexibility of distance learning while earning transferable college course credits. Also, working toward a degree from an accredited virtual university will allow more students to qualify for company tuition-reimbursement plans, according to *U.S. News and World Report.*

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